

RxStat

A public health and
public safety collaboration
for responding to problem drug
use at the municipal/county level

TECHNICAL ASSISTANCE MANUAL

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Inquiries or requests for further information on RxStat should be directed to the Bureau of Alcohol and Drug Use Prevention, Care, and Treatment, NYC Department of Health and Mental Hygiene: www.nyc.gov/health

EXECUTIVE SUMMARY

RxStat is a model for advancing a shared understanding of the patterns and characteristics of problem drug use – including prescription opioid misuse – in a local jurisdiction. In New York City, RxStat was initially developed with the goal of preventing overdose mortality. RxStat uses existing datasets to generate information which can be used to tailor targeted interventions and policy responses to reduce deaths and illness involving prescription opioid and other drug misuse.

This manual is designed to support local jurisdictions in the establishment of an RxStat initiative. It is organized as a technical assistance resource and guide for creating similar initiatives in other cities and counties around the United States. This manual is informed by the first two years of experience with RxStat in New York City, where the initiative was established in 2012.

The initiative relies on the collaboration of public health and public safety agencies in a jurisdiction. RxStat incorporates data from local, state, and federal government sources and applies a public health analysis for comparing and triangulating findings across datasets. These efforts require an investment in data analysts to conduct the work, and a willingness among agencies to share data for analysis.

Section One of the manual identifies and describes key elements in the five stages of RxStat development: Basics, Getting Started, Building Content, Managing Process, and Moving Forward. This section includes practical suggestions for structuring the work and observations and examples from the New York City experience in its first two years. To develop the content for this section, interviews were conducted during late 2013 with 23 individuals who have been key players in the ongoing work of New York City's RxStat. A checklist for RxStat implementation is presented at the end of the section.

In Section Two, readers will find detailed information on each of the datasets that have proven useful to the New York City initiative, including guidance for accessing, preparing, and analyzing similar datasets available in other jurisdictions. Because RxStat relies principally on standard administrative datasets as its sources of data, it can be replicated as an initiative in other jurisdictions.

TABLE OF CONTENTS

FOREWORD | 7

SECTION ONE – KEY ELEMENTS

I. BASICS | 8

1. Charge
2. Framework
3. Jurisdiction

II. GETTING STARTED | 10

1. Leadership
 - a. Catalyzing the initiative
 - b. Formal call to action
 - c. Coordination
2. Representation
 - a. Who are the public health actors?
 - b. Who are the public safety actors?
 - c. Reconciling the different perspectives

III. BUILDING CONTENT | 13

1. Data
 - a. Silos
 - b. Data-sharing and sensitivity
 - c. Methods
 - d. Learning
2. Resources
 - a. Investment in data analysts
 - b. Funding sources

IV. MANAGING PROCESS | 18

1. Structure
 - a. Working group
 - b. Stakeholder group
2. Participation
3. Action
 - a. Realizing value
 - b. Events triggering coordination investigations

V. MOVING FORWARD | 22

1. Movement to strategy
2. Expand to all drugs
3. Expand participation
 - a. Non-governmental actors
 - b. Legislative actors

VI. IMPLEMENTATION CHECKLIST | 25

SECTION TWO – DATASETS

OVERVIEW | 26

I. PUBLIC HEALTH ADMINISTRATIVE DATASETS | 27

- a. Accidental overdose deaths
- b. Hospitalizations with drug-related diagnoses
- c. Poison Control Center calls
- d. Emergency department admissions for suspected overdose events
- e. Ambulance calls for suspected overdose events
- f. Substance use disorder treatment admissions
- g. Jail health services intakes
- h. Dispensed prescriptions for controlled substances

II. PUBLIC SAFETY ADMINISTRATIVE DATASETS | 41

- a. Pharmacy orders for prescription opioid medication stock
- b. Drug-related prosecutions
- c. Pharmacy/clinic/doctor's office burglaries and robberies
- d. Loss or theft of controlled substance medications
- e. Medicaid coverage of local residents for prescribed controlled substance medications

III. SURVEY DATA | 49

- a. Youth drug use behaviors
- b. Adult drug use behaviors
- c. Arrestee drug use detection
- d. Emergency room admissions with drug mentions

FOREWORD

The RxStat initiative was established in New York City in 2012, emerging from the cross-disciplinary identification of local health and social problems related to prescription opioid misuse. The health department had observed high rates of opioid prescribing in particular neighborhoods of the city and was reporting increases in overdose deaths involving opioids in many of these same areas. Prosecutors and police were pursuing and trying cases against several local physician practices suspected of clinical malpractice.

To respond to this emerging crisis, former New York City Mayor Michael Bloomberg convened the New York City Task Force on Prescription Painkiller Abuse. The Task Force included a data work group to compile and share the public health and safety data reflecting the consequences of prescription opioid misuse in New York City, such as overdose death, prescribing patterns, and crime. Led by the New York City Department of Health and Mental Hygiene and taking the name RxStat, the data work group expanded to incorporate participants from city, state, and federal government agencies.

The formation and development of this multidisciplinary data-focused group established a platform for public health and safety collaboration. Prescription opioid misuse often occurs in the context of other drug use, and thus, RxStat also can provide insight into other problem drug use with many of the same data sources. By shaping a shared understanding of prescription opioid misuse and other problem drug use through the data, RxStat facilitates a trans-disciplinary approach to drug policy and practice innovation.

In this sense, the work of RxStat has shifted from its beginnings as an intersectoral, cross-disciplinary initiative focused on prescription opioid-involved overdose deaths to support a trans-disciplinary working group sharing and discussing data on problem drug use. “The whole is greater than the sum of the parts.”

SECTION ONE – KEY ELEMENTS

I. BASICS

RxStat brings together jurisdictional representatives from the two distinct disciplines of public health and public safety with the goal of characterizing prescription opioid use and other problem drug use in a local jurisdiction to inform policy and program interventions for preventing overdose mortality and reducing problem drug use. The process of RxStat can guide the development and implementation of tailored and measurable interventions.

1. Charge

Prescription opioid misuse is an issue that touches many different government agencies. In a single jurisdiction, information about prescription opioids is generated in many different places, such as the health department, the police department, and the medical examiner's office. Bringing together the major stakeholders allows for different perspectives on the issue and facilitates a shared, comprehensive understanding of the local patterns, characteristics, and trends associated with prescription opioid misuse.

RxStat builds a data-driven foundation to guide an integrated approach to prescription opioid and related drug policies and practices. In New York City, the initiative has organized around ***the shared goal of reducing prescription opioid misuse and related problem drug use.***

The specific measures adopted by RxStat assess the extent, severity, and heterogeneity of the problem. ***Accidental drug overdose deaths represent the leading critical indicator of this problem in the jurisdiction.*** RxStat adopts a hierarchical approach to defining and monitoring indicators; this is further described in the second section of this manual, in which the RxStat datasets are discussed in detail.

2. Framework

The RxStat initiative is grounded in a public health framework, emphasizing the use of data as a measure of patterns and trends in the population and considering drug use a health issue requiring a shared public health and safety response. Implementing this public health approach relies on a multi-disciplinary group made up of representatives from the agencies charged with protecting the health and safety of the community. Working together, this group can generate a broad, inclusive understanding of the local problems associated with prescription opioid misuse and other problem drug use. In practice, RxStat employs a public health model for analyzing and monitoring population-level indicators.

3. Jurisdiction

The experience with RxStat in New York City supports its utility and effectiveness as a municipal or county-level initiative. At this jurisdictional level, government agencies provide direct services to residents, facilitating their insight into the impact of policies and practices on community health and safety. Emergent problems can be identified in a local context, close to the ground and among a diverse group of actors, through information-sharing and data triangulation. Together, the group can compile, examine, and interpret available data and devise tailored responses to problems given agency knowledge and close experience with daily life in the jurisdiction.

The expansion of an RxStat initiative beyond the city or county microcosm, to a regional or even state-wide level, could threaten its viability as a real-time analytic and problem-solving effort. The greater the distance of representative agencies and participants from the ground and the daily lives of the jurisdiction's residents, the less connected they are to the patterns implied by the data and the implementation of localized responsive programs and policies.

II. GETTING STARTED

1. Leadership

The cohesion and focus of an intersectional jurisdictional initiative such as RxStat relies on its formal and informal leadership, as well as on the ongoing work of project coordination.

a. Catalyzing the initiative

The development of an RxStat initiative in a county or municipal jurisdiction is unlikely to happen simply because it is a “good idea.” Building momentum for the initiative may be necessary to ensure sufficient buy-in for its formal establishment, and advocacy both within and among agencies can help make this happen. In New York City, the New York/New Jersey High Intensity Drug Trafficking Area (NY/NJ HIDTA*) Program worked in partnership with the city’s health department to plan and initiate RxStat. Ideally, one or more individuals with standing relationships among health and/or safety agencies and networks can take on this role.

Informal dialogue can help to identify and rally individuals working in the public health and safety agencies to generate interest in RxStat and support for getting started. This approach may be particularly important to foster support from local public safety representatives, given RxStat’s explicit public health framework. Preliminary outreach to ranking officials in key agencies can help prepare foundational discussions towards the formal development of the initiative.

b. Formal call to action

The mayor or county executive plays a key role in the formation of RxStat. Establishing the initiative as an ongoing formal body of the jurisdiction provides a structure for stakeholders’ coming together and cooperating to share, analyze, and interpret the data, whether as a task force, a committee, or some other named working group. The leadership of the jurisdiction’s top executive in this effort is of central importance for the successful convening of the group.

The distinct and often divergent roles played by the agencies responsible for the public health and safety of a jurisdiction’s residents may make them unfamiliar with each other in a daily working context. Collaboration between these entities may not be routine occurrence. Even where the different disciplines find common cause – for example, standardizing coordinated responses to reported cases of sexual assault – collaboration between the agencies is usually time-limited, focused on the development and implementation of a specific plan.

*The NY/NJ HIDTA is funded by the White House Office of National Drug Control Policy. One of the goals of the NY/NJ HIDTA is to reduce the most harmful consequences of drug abuse, particularly drug overdose deaths. Through its Drug Trends Group, the NY/NJ HIDTA supports the efforts of local public health and public safety agencies to collect and analyze timely data on a comprehensive set of drug-use indicators, with particular emphasis on the abuse/misuse of heroin and prescription opioids.

Because representatives from the two disciplines rarely work together in a routine or ongoing fashion, the leadership of the jurisdictional authority sets expectations for collaboration. Such formal leadership is essential for motivating a commitment to a shared purpose among the group and curbing the potentially incommensurable public health and safety approaches to problem-solving.

The specific selection of participating agencies and their representation to the initiative is also the decision of jurisdictional leadership. Requiring the involvement of senior-level representatives from the governmental agencies serves to prioritize the work and gives it urgency and momentum.

In New York City, the Deputy Mayor of Health and Human Services and the city's Director of Criminal Justice formally convened a mayoral task force on prescription opioid misuse, and RxStat developed as its data working group. The conveners invited agency commissioners from city and state government to participate (or designate senior leaders to participate) in the task force and in the data working group. The conveners extended similar invitations to county prosecutors and local leadership from federal agencies.

The involvement of senior leaders signals the particular importance and value of the initiative. The visibility of this commitment can encourage leadership from other agencies, including separately elected individuals, such as prosecutors, to join and actively participate.

c. Coordination

As an ongoing, multi-agency collaboration with a considerable administrative component, RxStat relies on a centralized coordinator to provide project management. The coordinator manages meeting logistics, channels inter-agency communications, and organizes content, working with agency representatives and staff to access data and finalize presentations. The coordinator also serves in an anticipatory role, laying groundwork for upcoming meetings through informal, preparatory conversations with agency representatives behind the scenes.

The coordinator position should be based in a location to facilitate information access and exchange and where existing data-sharing and analytic expertise is housed. The coordinator may be best situated within the agency contributing the majority of the data to RxStat, likely the public health department. Alternately, the coordinator could be centrally located within the mayoral or county executive office.

2. Representation

The strength of a jurisdictional initiative such as RxStat depends on the active participation of agency representatives.

a. Who are the public health actors?

Principal agency: Public health department

Other participating agencies: Substance use disorder treatment program authority (state), hospital systems (public), prescription drug monitoring program (state), education department, emergency medical services, correctional health services, homeless services, child protection services, social services (public assistance).

b. Who are the public safety actors?

Principal agency: Police department

Other participating agencies: Prosecutors (county elected), HIDTA, drug law enforcement (federal), probation, parole, Medicaid fraud investigation.

c. Reconciling the different perspectives

The boundaries between public health and safety are sometimes blurred and overlapping, and a wide, often-divergent range of perspectives exists, even among the professions within a discipline.

In New York City, RxStat includes government actors from the county, municipal, state, and federal levels, each of whom are empowered by their respective authorities. This involvement benefits the initiative by incorporating perspectives from other levels of government but may also present a challenge, as different interests and orientations may shape each of their work agendas.

The operating strategy and keystone for RxStat collaboration is data analysis. This focus helps to overcome differences among participants because the group works in the context of data to build a shared lens and foster learning from one another's experiences.

Using data to build a trans-disciplinary approach across different levels of government helps address the complexities of responses to problem drug use. The experience of RxStat in New York City, involving a large number of agencies and perspectives, confirms that the development of this approach is feasible and yields positive outcomes.

“We want to hear what people are saying and understand their point of view... I’d like to think that the more data-driven perspective facilitates this.”

—PUBLIC HEALTH REPRESENTATIVE

III. BUILDING CONTENT

1. Data

The practical work of RxStat involves a wide range of datasets, most of which are generated for administrative, rather than research, purposes. As a consequence, data ownership, variable selection, data collection, and information management are all organized to meet the functional needs of their agencies. Negotiating access to and use of the data represents one of the main operational hurdles for implementing RxStat.

“Data is the glue that brings everything together.”

—PUBLIC SAFETY REPRESENTATIVE

a. Silos

The problem of separately operating silos is not new to government, but for a collaborative initiative such as RxStat, it presents a particular structural challenge. The initiative uses information from many different agencies where it is already collected, and standardizes the way it is presented for side-by-side consideration.

Although the primary datasets of interest for RxStat are held within the public health agency, they are usually collected and maintained by different offices. For example, in New York City, death data is managed by the vital statistics office, hospitalization data is maintained by the state health department, and emergency department visits are tracked and maintained principally as a monitoring tool for communicable disease. RxStat relies on effective communication and coordination with the primary owners of each dataset to establish parameters for accessing and analyzing the data.

b. Data-sharing and sensitivity

As such, data-sharing is a central issue for RxStat. Many agencies lack the capacity to analyze their own datasets, while this expertise is often well-developed in the public health department. Consequently, the need to share or transfer datasets from the ownership agency to the RxStat office is likely to arise.

The problem of identifiable data is the most common, but resolvable, data-sharing issue for RxStat. Because the initiative focuses on patterns in the data, rather than on specific individuals, all datasets are de-identified for the purposes of RxStat. Agencies may also have concerns regarding the sensitivity of specific variables in the data they gather and will need to distinguish these in relation to the variables of interest to RxStat. Finally, the potential for data misinterpretation may threaten agencies’ willingness to share data. These types of concerns may need to be explicitly addressed and will help to build trust among RxStat participants.

A data use agreement can resolve concerns related to data-sharing. A standard agreement should specify that data will be de-identified prior to sharing, that the itemized, agreed-upon variables

will be shared, and that some form of penalty will be levied for any violation of the agreement or its terms by either user. Formal memoranda of understanding are sometimes needed, but such agreements can become bound up in inter-agency legal negotiations for an extended period of time, preventing the work from moving forward.

In addition, detailed data-sharing guidelines from the ownership agency for each dataset of interest can guide the development of a data use agreement. Such guidelines should include a complete codebook for the dataset and specify any exclusions for data-sharing or potential analyses, the preferred methods for addressing confidentiality issues (e.g., de-identification, encryption, HIPAA), and other issues relevant to data ownership and transfer.

Data use agreements specify:

- de-identified data
- itemized variables
- penalty to be levied for violation

Clarifying processes and expectations for data-sharing early in the development of RxStat can smooth implementation considerably. These discussions provide an opportunity to address agency and analytic concerns up front and with transparency, beginning to map analyses together in ways that will be most useful. Ideally, ownership agencies can bring sample analyses or data tables to the group for informal review and planning before data-sharing is formalized and initiated. This process can help to establish agreement on what and how data will be shared, prepared, and analyzed.

c. Methods

RxStat applies epidemiologic methods for preparing and presenting data regardless of source. While this approach is standard to public health, it is notably different from the methods law enforcement uses to examine data. For example, data available through the prescription drug monitoring program are generally used to identify patients meeting specific criteria (e.g., receiving opioid prescriptions from more than one doctor in a single month), with the goal of curbing medication misuse and diversion. By contrast, a public health analysis is concerned with the relative distribution of all opioid prescriptions by geography, patient age, frequency or quantity of prescriptions, etc.

RxStat applies population-level public health analyses to non-public health data. Law enforcement examines information at the individual level, similar to health care providers. This contrasts with an epidemiologic approach, which reports data in relationship to similar phenomena – i.e., as a proportionate value, rather than a simple number.

RxStat establishes a standard, epidemiologic approach for considering the characteristics, patterns, and trends in public safety data involving prescription opioid misuse and other

problem drug use. In this approach, public safety events are reported as a segment of a larger, similar group. For example, prescription opioid arrests during a given period as a proportion of all drug arrests during that period.

An unexpected development of RxStat has been its energizing effect among participants for identifying and gathering new data sources. As new datasets are integrated into RxStat, analytic findings are shared and discussed in working group meetings. These findings can generate connections and, often, new ideas for data collection and analysis. The diverse perspectives and varied experiences of RxStat participants, working together in the context of the initiative, continue to yield new opportunities for further development.

“It’s challenging because it highlights some different approaches to data that could really inform different responses.”

—PUBLIC HEALTH REPRESENTATIVE

d. Learning

Through presentation and discussion in regular meetings in a respectful, open environment where questions are encouraged, agency representatives learn from one another and develop a shared sense of ownership for RxStat. Agencies that are forthcoming with data inspire representatives from other agencies to initiate plans for sharing; a sense of mutual trust develops in the group.

Beyond the data, participants in RxStat learn each other’s terminology and approaches. This is an issue not only for the introduction of new terms, but also when a term is differently understood in each discipline. For example, in public health, the term “key informant” refers to an individual with expert community knowledge, while in public safety, it describes someone cooperating with the prosecution in the development of a criminal case. The definitions of terms must be clearly articulated for the group, and even repeated each time a term is used, to solidify and reinforce comprehension among participants. The development of a shared lexicon for RxStat grounds the initiative in a common, pragmatic language.

RxStat participants maintain an open approach to understanding data. They welcome any new data source introduced to the group and view each dataset as contributing pieces to the puzzle of describing drug use in the jurisdiction. Participants in the New York City initiative report their experience with RxStat appreciatively, noting it has helped them to develop a multifaceted, nuanced perspective on prescription opioid misuse. They highlight the progressive group dynamic produced by meetings and report examples of learning that include the effects of problem drug use in the community, the role of opioid substitution treatment, and the relationship between drug diversion and crime.

2. Resources

a. Investment in data analysts

The basic work of RxStat is data analysis, and it cannot be accomplished without the person-power of data analysts. The agency where the initiative is housed, usually the public health department, needs expertise to conduct statistical and epidemiologic analyses, if this is not already in place. The agency may require resources to dedicate analysts to RxStat.

“The more time we spend in RxStat, the more we realize the importance of educating people about drug addiction.”

—PUBLIC SAFETY REPRESENTATIVE

Data analysts represent an investment in the preparation, analysis, and interpretation of data. Given their keen understanding of the data, analysts play key roles in all the initiative’s meetings, presenting and explaining findings for the group. Meeting discussions also give analysts the opportunity to gather ideas and feedback for conducting new analyses. Senior managers at agencies with data analyst capacity should ensure these staff can participate in RxStat.

The initiative requires a financial investment to create and fill analyst positions and to offset the costs of RxStat participation for already-existing staff. Resources are necessary to make use of existing data for RxStat, and jurisdictions seeking to replicate the initiative will need to make an investment to implement RxStat. Some agencies may need financial support to dedicate a staff member to the initiative, even on a part-time basis. In smaller communities, law enforcement might benefit from a centralized data analyst resource to prepare public safety data. In some cases, technical assistance to get the initiative going may warrant start-up support as well.

Similar agencies can pool their efforts to analyze data or rely on the best resourced among them to manage the data and conduct analyses, while the others may simply arrange for the routine transfer of specific data files. For example, in New York City, where there is a prosecutor for each of the five counties, one of these offices uses its resources to prepare the data for all five prosecutor offices; the others can simply transfer the requested files to that office each month. In rural counties with few resources, building any capacity for data analysis may present a significant obstacle to the development of RxStat.

The RxStat process may yield additional analytic and research needs, calling for additional funding. For example, agencies with extensive data sources may choose to invest in an internal data analysis unit as they consider new uses for these data through participation in the initiative. Setting up real-time quantitative analytics, such as surveillance for emergency department visits, may require additional, dedicated investment in staffing. Findings suggested by the RxStat datasets may be better understood through focused qualitative research efforts; the initiative may need funding to hire a dedicated qualitative investigator for this purpose.

b. Funding sources

There are a number of potential sources of funding for investments in data analyst staff and related RxStat costs. New York City’s initiative has benefited from an initial funding investment by the NY/NJ HIDTA program, bolstered by additional resources secured through a competitive grant awarded by the federal Department of Justice’s Bureau of Justice Assistance.

As a policy investment, jurisdictions could view RxStat as an initiative that will result in longer-term cost savings to local and state government services once it is fully implemented and operating. For example, drug-related costs to both law enforcement and emergency health care services may decline as the jurisdiction becomes more effective in mobilizing programmatic and policy responses to findings in the data. A portion of these projected savings could be invested in the development of RxStat in anticipation of such effects. Regardless of the source, a funding investment is essential for making RxStat work.

“This should be a funding priority because it’s an epidemic.”

—PUBLIC SAFETY REPRESENTATIVE

IV. MANAGING PROCESS

1. Structure

RxStat involves both developmental activities – gathering, preparing, analyzing, and discussing data – and reporting activities – reviewing and discussing particular findings of interest. To accomplish this parallel approach, the RxStat structure in New York City has been organized into two groups: a process-oriented working group and a formalized stakeholder group.

a. Working group

In New York City, the working group is comprised of mid-level and some senior-level staff representatives from the agencies participating in RxStat, including data analysts. The group meets on a monthly basis to review and discuss findings from analyses of existing datasets, and to identify and plan for accessing new datasets. Meeting content is treated as confidential, and participants are expected to honor and model this standard. The RxStat coordinator manages meeting logistics and tracks meeting discussions and follow-up needs as they arise.

While these meetings do follow an agenda, they serve as a sounding board for the initiative – providing a forum for brainstorming sessions to better understand the data, discuss emergent findings, and share related policy efforts or program activities. This process is particularly valuable because it builds from the knowledge of the diverse group represented in the room, reflecting the broad spectrum of public health and public safety agencies working in the jurisdiction. Participants are encouraged to ask questions, and the learning that happens in this meeting is fed back to the respective agencies. Buy-in for the process grows, and a shared comprehension of the landscape is further developed.

“Trust is being built and relationships are being built as a result of the process of meeting every month to go over data. It’s hard to put a value on that, but it’s valuable.”

—PUBLIC HEALTH REPRESENTATIVE

The working group of RxStat serves as the multi-agency engine for the initiative, developing, shaping, refining, expanding, and driving the work towards the establishment and maintenance of a real-time, wide-angle view of prescription opioid misuse and other problem drug use in the jurisdiction.

b. Stakeholder group

The stakeholder group represents the public face of RxStat in New York City. Meetings involve senior-level staff representatives from the participating agencies and take place on a quarterly basis. These meetings operate more formally and involve a series of presentations by analysts, showcasing the latest findings generated through the working group and the incorporation of new datasets. The meetings are jointly chaired by RxStat leadership from the NY/NJ HIDTA and the public health department respectively, while meeting logistics are managed by the RxStat coordinator.

As a higher-level meeting, the stakeholder group creates a forum for representatives to understand the data in the context of new policies or practice initiatives. In addition, agencies that have not yet joined RxStat may join a stakeholder meeting to understand the work of the initiative and consider the role they might play as an active participant. In New York City, representatives from other jurisdictions and from state and federal agencies have participated in this meeting to learn about the work of RxStat. This group provides an opportunity to showcase findings and generate support for new policy efforts and program activities among participating agencies.

2. Participation

RxStat meetings create a space for representatives from the public health and safety agencies to interact with one another, many of whom would otherwise never meet each other at work. These introductions, in regular meetings and in small groups working on specific issues, ease personable communication and build relationships across the disciplines. As a consequence, people feel more comfortable asking questions in the meetings and learning from one another.

Naturally, these relationships also expand and improve information access and sharing among RxStat participants outside of the meetings. As staff get to know one another at the meetings, they exchange contact information and offer assistance to one another.

They recognize intersections and shared interests in their work and identify opportunities for collaboration and mutual benefit. Participants become more comfortable with one other, contacting each other between meetings to better understand policies, programs, or data, or to address shared issues and concerns, and all of these interactions help the work evolve. Data-sharing is simplified because participants feel

“What’s been helpful are not just the findings, but the process of using the data and the relationships that are built around that, and the credibility that’s been built – there is then the opportunity for mutual respect, and that’s really important when you’re trying to make big changes.”

—PUBLIC HEALTH REPRESENTATIVE

comfortable having informal conversations to discuss the most useful content for including in data requests and even prepare these requests together.

This groundwork happens between meetings, among analysts and other participants close to the data, but serves as fuel for the work of the initiative. Conversations during working group meetings or in between meetings help participants to better understand each other's perspective. The strength of inter-agency relationships in RxStat helps to rally new participation and buy-in for the work of the initiative and for engagement across the disciplines.

The benefits of relationship-building are not always tangible, nor can they be forced. The New York City experience with RxStat has demonstrated that, when there is sufficient interest, curiosity, and, particularly for representatives from the two disciplines, a shared commitment to the work, these relationships develop quite organically.

RxStat is guided by a philosophy of collaboration and the recognition that working together across disciplines on the issue of prescription opioid misuse and problem drug use can prevent participants from working at cross purposes in practice. Regular attendance at the working group meetings, the willingness to supply data when requested, and a respectful, critical learning environment among participants and across disciplines have advanced the cooperative spirit of the initiative. The combined effect of these factors provides a strong foundation for RxStat.

3. Action

a. Realizing value

The developmental experience of RxStat in New York City has resulted in an active partnership, with buy-in across the different agencies and a commitment to the bigger picture, not simply one's own role and interest in the issue. RxStat creates an environment of mutual learning and innovation among diverse agencies with little additional funding. The initiative has realized operational efficiencies by transferring knowledge and skills, adding and adapting agency-level data collection, and tailoring intervention strategies to respond to specific issues. This effect is particularly important as the budgets of municipal and county agencies continue to contract in the current economy.

Practice-sharing across disciplines has been reinforced by the publicity given to RxStat data findings. The presentation of government-generated public health and public safety data side-by-side, in a unified report on the topic of prescription opioid misuse and problem drug use, is essential for demonstrating its trans-disciplinary value. Agencies involved with RxStat have together advocated on related state policy issues and legislative efforts, effectively accessing both health and criminal justice representatives in the state executive and legislative branches. Without the RxStat partnership, such wide reach in the legislative branch would have been limited or non-existent.

These efforts reflect the power generated by developing and positioning shared work with diverse perspectives. The relationships that have developed among the agencies through RxStat represent a first step toward an integrated approach to addressing problem drug use. Simply put, “the whole is greater than the sum of its parts.”

b. Events triggering coordinated investigations

While RxStat focuses on incorporating datasets for the real-time monitoring of drug-related indicators, specific drug-related events or findings may necessitate an immediate response. Before the implementation of RxStat in New York City, such events would usually have been addressed by a single agency acting alone, and information may not have been shared with others beyond that agency. With the initiative now in place, the coordinated involvement of multiple agencies can generate a rapid, comprehensive response to the event, while ensuring shared planning and agreement for the content of the public response.

RxStat participants and leadership should work together to identify the types of events that trigger the need for coordinated investigations among agencies and to establish shared written protocols for responding to these events. In New York City, three types of events have been identified for instituting a shared protocol for a coordinated inter-agency investigation and public response. These events are:

1. A highly publicized fatality where drug poisoning or accidental overdose is suspected, such as the death of participants in a public event or the reported death of a particular individual in the jurisdiction.
2. A geographic cluster of adverse (fatal or non-fatal) health events over a brief period of time where drug poisoning is suspected.
3. A law enforcement drug seizure, purchase, or investigation where atypical and/or potentially lethal drugs, such as fentanyl, are identified.

Coordinated investigations and responses are enabled by the data-sharing and analytic methods established by RxStat. The relationships built through RxStat can facilitate an efficient, comprehensive process and a timely, unified response to events. A shared plan developed through a coordinated investigation can be particularly important in the context of fast-moving media coverage on highly-visible cases.

V. MOVING FORWARD

1. Movement to strategy

The data provides an essential starting point for an integrated approach to developing responsive policy and interventions. The common language that develops during RxStat helps participants to begin thinking about pragmatic strategies for addressing problems identified through the data.

“To the credit of various partners, they want actionable things to do, so it was the absolute correct strategy to come together around the data, but then who is actionable for those data items, how it bumps up into different issues around silos and leadership...”

—PUBLIC HEALTH REPRESENTATIVE

This juncture, moving from problem to strategy, represents the next hurdle for the initiative, and will evolve with the convening of a separate, intervention-focused group of representatives from the jurisdiction.

Moving from the unified, data-driven foundation of RxStat to actionable, measurable strategies is feasible. A few intervention strategies have already been implemented from the RxStat findings in New York City, including:

- Opioid prescribing guidelines for emergency departments in public hospitals
- Overdose intervention training and naloxone prescribing (opioid antidote) for police, as first responders
- Public service announcements on opioid overdose risk
- Public health detailing campaign to prescribers in Staten Island

2. Expand to all drugs

As the initiative progresses, the use of drugs other than prescription opioids have become part of RxStat discussions. These include recent increases in heroin-related deaths, the role of benzodiazepines in opioid-related deaths, and the expanding recreational use of emergent drugs, among other issues. In fact, the health and social problems associated with prescription opioid misuse, such as accidental overdose death, almost always involve other psychoactive substances.

In interviews for the development of this manual, many participants suggested the RxStat initiative should explicitly expand its approach to include all other psychoactive drugs, even

perhaps including alcohol. This preference reflects a natural progression for the work, as it transitions from establishing real-time surveillance of drug-related indicators to developing and implementing strategies to address the drug-related problems RxStat identifies.

Expanding the initiative to include all drugs is simplified by the fact that indicators capturing this information are already in place for RxStat, such as overdose mortality, drug-related hospitalizations, and drug-related arrests.

3. Expand participation

To date, the work of New York City's RxStat has relied on the participation and cooperation of governmental actors, including leadership from jurisdiction-level agencies and representatives from state and federal agencies. This arrangement has enabled data gathering, sharing, and analyzing from among the agencies' administrative datasets to compile a real-time drug-related surveillance system. Now the initiative is reaching its next stage: identifying and implementing actionable strategies to respond to findings in the data.

In this second stage, new agencies or actors may need to be incorporated, and new structures for communication and planning may be needed. These changes will be important to guarantee the continued evolution of the work towards achieving its goal: reducing prescription opioid misuse and problem drug use in the jurisdiction.

a. Non-governmental actors

Governmental agencies do play some role in the implementation of intervention strategies through contracting with non-governmental actors or in their own work as service providers. However, non-governmental actors are also centrally involved, whether as service providers in particular communities, or as advocates for affected groups. Many groups are dually involved in some fashion, providing services in a community-based or institutional context and also participating in coalitions or professional associations to represent, advocate for, or promote policies and practices related to their work.

In its next stage of development, the initiative could benefit from incorporating non-governmental actors into the discussion. These groups could serve a threefold purpose: to report emergent drug problems they observe in their work, to assist with the identification and implementation of intervention strategies, and to offer direction for potential policy strategies to improve health and social outcomes.

b. Legislative actors

Legislative actors could also prove important for furthering the work of the initiative. As elected representatives for the people of their respective districts, they would benefit from learning about findings in the data and about problems of drug use in general. In addition, they could help develop and support the passage of legislation to improve systems, policies, and interventions addressing the health and social problems related to problem drug use in the jurisdiction.

VI. IMPLEMENTATION CHECKLIST

Are you ready to implement an RxStat initiative in your jurisdiction? Review the key elements and their components.

- ___ Local champion(s) to initiate the process
- ___ Foundational discussions with the local public health agency
- ___ Foundational discussions with the local law enforcement agency
- ___ Mayoral or county executive prepared to establish the initiative
- ___ Identify and engage other public health actors for participation
- ___ Identify and engage other public safety actors for participation
- ___ Identify and invite relevant state and federal agencies for participation
- ___ Prepare an agency home for RxStat data analysis and project management
- ___ Identify datasets to initiate RxStat and ensure data use agreements are in place
- ___ Enumerate data analyst staffing needs and unmet cost, if any
- ___ Identify potential funding sources for unmet staffing costs
- ___ Develop and agree upon responsive meeting structure and frequency
- ___ Consider which drugs will be included
- ___ Consider how and to whom findings will be disseminated

SECTION TWO – DATASETS

OVERVIEW

Data is the core focus and content of RxStat. It is the principal work of the initiative: sharing, preparation, analysis, and presentation of drug-related indicators.

Most of the datasets included in RxStat are generated for administrative purposes by the government agencies who own them. The fact that data are not produced for the specific or sole purpose of tracking and monitoring patterns associated with prescription opioid or other drug misuse has important implications for the initiative. The work of RxStat involves considerable preparation of the datasets before any analysis is possible. In some cases, this process is quite extensive and time intensive. This section of the manual is designed to assist analysts working with these datasets to isolate and present drug-related information from standard administrative datasets.

RxStat's reliance on administrative datasets permits its replication in other jurisdictions, because these data are standardized. Each of the datasets included in RxStat is produced in a similar format at the county or state level throughout the country. This section is structured to provide suggestions and direction for accessing similar datasets in other jurisdictions and for anticipating issues involved in this process.

In the following pages, each RxStat dataset is presented and described. The sources are presented in a hierarchical fashion to reflect the relative importance of each drug-related indicator in a public health framework. The mortality dataset is discussed first, followed by datasets assessing morbidity, and completed with datasets reflecting different aspects of drug use prevalence (i.e., treatment admissions, jail-based health intakes, arraignments, etc.).

The information is presented in a table format and includes considerations for working with each dataset, including: data ownership, access, drugs included, how content is produced, the data request for RxStat, potential lag-time in the data, caveats regarding the particular dataset, data preparation, and the analysis plan for RxStat. Where possible, case selection code and definitions are also provided to assist analysts working directly with these data. Administrative datasets managed by public health agencies are presented first, followed by administrative datasets managed by public safety agencies. The availability and utility of survey data for incorporation into RxStat is briefly discussed in the final chapter of this section.

I. PUBLIC HEALTH ADMINISTRATIVE DATASETS

a. Accidental overdose deaths

NAME	Unintentional (accidental) drug poisoning (overdose) deaths.
AGENCY OWNER	Health department vital statistics office and local medical examiner's office.
ACCESS	Vital statistics records are maintained by the state health department, which receives case reports of overdose deaths from the county medical examiner's or coroner's offices. In smaller jurisdictions, it may be easier to go directly to the medical examiner's or coroner's offices to select the case files of interest and gather information. Due to the higher volume of cases, larger jurisdictions should initiate case-finding with the vital statistics office.
DRUGS INCLUDED	All poisoning deaths in the jurisdiction.
HOW CONTENT IS PRODUCED	Premature deaths or those of unspecified or unnatural cause are investigated by the jurisdiction medical examiner's or coroner's office, including toxicology analyses, the setting of death, and any related information which can be collected through investigation. Based on findings, the medical examiner or coroner assigns the cause and manner of death, and files a case report with the office of vital statistics in the state health department. Here, the case is coded by a nosologist, and a final case record is filed with the vital statistics office.
DATA REQUEST FOR RXSTAT	From the vital statistics office, request all cases with drug-related cause of mortality. See Case Selection Code section below for detailed definition using ICD-10 codes and a case selection protocol. Alternately, in a smaller jurisdiction, request all unintentional or accidental cases from the medical examiner's or coroner's office.
POTENTIAL LAG-TIME	Minimum 4-6 weeks due to toxicology testing and confirmation, and maximum 1.5 years, as vital statistics reports are generally published annually.

<p>DATA NOTES AND CAVEATS</p>	<p>a. The protocol for case selection described here was developed in NYC and provides an exhaustive, specific approach for confirming the identification of all possible unintentional drug poisoning cases, as labeled. Other jurisdictions have adopted different approaches, including reporting on all poisoning cases, regardless of intent, and reporting specific drug involvement in cases based upon vital statistics record reports alone, rather than from toxicology reports examined in case file review.</p> <p>b. In NYC, specific standards have been established for labeling information abstracted from toxicology reports during the case file review. All cases with “morphine” should list “heroin” as a case-involved drug, and all cases with “ethylbenzoylecognine” should list both “cocaine” and “alcohol” as case-involved drugs. Moreover, wherever “alcohol” is found in a drug-involved case, it should be reported and listed as a drug in that case.</p>
<p>DATA PREPARATION</p>	<p>From the final set of cases selected, abstract the following information for each case: decedent sex, age at death, race/ethnicity, zip code of residence, zip code of death, setting of death, drugs involved.</p>
<p>ANALYSIS PLAN FOR RXSTAT</p>	<p>RxStat indicators: Age, sex, race/ethnicity distribution by neighborhood of residence, by drug type involved, by drug type combinations involved. Neighborhood of residence by drug type involved, by drug type combinations involved.</p>

Case selection code

Definition: Unintentional (or accidental) drug poisoning deaths – Using vital statistics records*

*Note: Using multiple cause cases, in addition to underlying cause cases, provides the most comprehensive approach for using vital statistics records to identify unintentional drug poisoning deaths. It is reasonable to restrict this analysis to underlying cause cases only, thus eliminating step 5 below.

1. Select all poisoning cases for the period of interest.
 - a. Select the following codes, both underlying and multiple cause (X40-X49; X60-X69; X85-X90; Y10-Y19; U01{.6-.7}; F11-F16; F18-F19; R99)
2. Restrict “manner” to accident.
3. Restrict age of decedent to be 15-84 years.
4. Break out cases that have underlying cause of X40-X44, F11-F16, F18-F19 (excluding F codes where the third digit is .2 or .6), R99.

5. Using file of cases that do not have X40-X44, F11-F16, F18-F19 (excluding F codes where the third digit is .2 or .6), R99 as an underlying code.
 - a. Break out those cases that have X40-X44, R99 in the multiple cause file with any underlying code.
 - b. Review cases that have an X40-X44, R99 in the multiple cause field, with any other underlying code. These cases should be reviewed manually by reviewing the literal cause of death in both Part 1 and Part 2. Cases should be excluded for the following reasons:
 - i. Drug is mentioned in Part 2 of the death certificate only
 - ii. Death is due to a non-drug poisoning such as carbon monoxide
 - iii. Death is due to salicylate or acetaminophen poisoning
 - iv. Record not confirmed at the OCME
 - v. Death is due to a physical cause such as:
 - Drowning
 - Blunt force trauma
 - Asphyxia
 - Hypothermia/Hyperthermia
6. The final case file should include all cases with an underlying cause of X40-X44, F11-F16, F18-F19 (excluding F codes where the third digit is .2 or .6), R99 and any cases that were found and kept in step 5) above.

b. Hospitalizations with drug-related diagnoses

NAME	SPARCS (Statewide Planning And Research Cooperative System). See data notes below for further information.
AGENCY OWNER	State Department of Health (SDOH) or state licensing authority for healthcare facilities.
ACCESS	From SDOH, through formal arrangement, e.g., IRB, data use agreement.
DRUGS INCLUDED	All ICD-9 codes for any drug-related discharge (includes drug-specific codes).
HOW CONTENT IS PRODUCED	All state-licensed hospital and ambulatory care clinic facilities report patient discharge data to the licensing authority, e.g., SDOH. Each discharge is reported as a unique record; patients can have multiple records, if they have multiple discharges within a given time period. Discharge records include diagnostic codes (ICD-9) for principal, secondary, and injury diagnoses.
DATA REQUEST FOR RXSTAT	RxStat requests all unique discharge records generated by licensed healthcare facilities within the jurisdiction during a period of interest (usually by calendar year), for all drug-related diagnoses, excluding injury diagnoses (E-codes) of suicide, homicide, or undetermined intent. Discharge records are anonymized but assigned unique identifiers for each patient. Variables in the discharge record include: patient unique identifier, gender, race/ethnicity, age at time of admission, and zip code of residence; healthcare facility location; if ICD-9 diagnosis in case selection list, then included in definition for any drug-related diagnosis (for detail, see Case Selection Code section below).
POTENTIAL LAG-TIME	One year, due to reporting lags from facilities (up to three months) and subsequent data-cleaning at SDOH.
DATA NOTES AND CAVEATS	<ul style="list-style-type: none"> a. In other states, this dataset is known by different names, including State Emergency Department Databases, State Inpatient Databases. b. This dataset excludes federally-managed healthcare facilities operating in the state, e.g., Veterans Administration facilities. c. The Healthcare Cost and Utilization Project (HCUP) provides access to health statistics and information on hospital inpatient and emergency department utilization.

DATA PREPARATION	<p>Use patient zip code of residence to categorize records by neighborhood, borough, state, and other.</p> <p>Define counts of unique patients by first hospitalization in the period of interest.</p> <p>Aggregate frequency and distribution of records, N (%).</p> <p>Calculate age-adjusted rates: (i) intercensal jurisdiction population estimates as denominators for the year of interest, (ii) age-adjust to US standard census 2000 weights.</p>
ANALYSIS PLAN FOR RXSTAT	<p>RxStat indicators:</p> <p>Number of hospitalizations overall and by drug type.</p> <p>Number of patients hospitalized by demographics (gender, race/ethnicity, age, borough of residence/hospital, neighborhood poverty level, UHF42).</p> <p>Diagnoses:</p> <ul style="list-style-type: none"> • Principal, secondary • Drug psychoses (292.x), dependence (304.x), abuse (305.x) • Poisoning • Co-morbidities based on HCUP diagnostic groupings <p>Procedures.</p> <p>Average length of stay.</p>

Case selection code

Definition: Any drug-related discharge -

```

if diagnosis in ('292.xx','304.xx','965.xx','967.xx','969.xx','970.xx','305.2x','305.3x','305.4x',
'305.5x','305.6x','305.7x','305.8x','305.9x','357.6','648.3x','655.5x','779.5',
'968.0','968.5','760.72','760.73','760.75','970.81','E850.x','E851','E852.x',
'E853.x','E854.x','E855.1','E855.2','E935.0','E935.1','E935.2','E950.0',
'E950.1','E950.2','E950.3','E950.4','E962.0','E980.0','E980.1','E980.2',
'E980.3','E980.4')
then ICD-9='Any drug-related diagnosis';

```

Definition: Opioid-related discharge -

```

if diagnosis in
('304.0x', '305.5x', '304.7x', '965.0x', 'E850.0', 'E850.1', 'E850.2', 'E935.0', 'E935.1', 'E935.2')
then ICD-9='Any opioid related diagnosis';

```

c. Poison Control Center calls

NAME	Poison Control Center calls.
AGENCY OWNER	Poison Control Center (PCC) for jurisdiction, region, or state.
ACCESS	From PCC, direct system access via electronic portal through formal arrangement, i.e., data use agreement.
DRUGS INCLUDED	All controlled substance-related calls.
HOW CONTENT IS PRODUCED	Calls are received by PCC from a variety of sources, most frequently from clinicians in health care facilities. Information is logged and completed in a centralized call database by PCC staff in near real-time, per shift, as the reason for the call is handled.
DATA REQUEST FOR RXSTAT	RxStat has direct, real-time system access via electronic portal to all variables in the PCC database, including categories detailing patient information, substance in question, treatment information, outcome information, and caller information.
POTENTIAL LAG-TIME	Real-time, within 24 hours of PCC receipt of the call.
DATA NOTES AND CAVEATS	<ul style="list-style-type: none"> a. Due to low counts for other controlled substance-related calls in NYC, only opioid analgesic-related calls are presented for inclusion in RxStat. b. Patient zip code of residence is provided in only 15% of NYC call records; analysis is not possible for geographic distribution of patients' residence.
DATA PREPARATION	<p>Patient information includes: call intake date, sex, age, zip code.</p> <p>Substance in question includes: substance category, substance description, caller verbatim, exposure type, exposure site (ingestion, other route, unknown route), acute or chronic.</p> <p>Treatment information includes: management, disposition (if treated in health care facility), initial health care facility, final health care facility.</p> <p>Outcome information includes: medical outcome, estimated effects duration.</p> <p>Caller information includes: caller relationship, caller county, caller state, caller zip code.</p>
ANALYSIS PLAN FOR RXSTAT	<p>RxStat indicators:</p> <p>Volume (N) of opioid analgesic-related calls received per calendar quarter, in comparison with volume (N) received in previous year same calendar quarter.</p>

d. Emergency department admissions for suspected overdose events

NAME	Emergency Department (ED) syndromic data.
AGENCY OWNER	Hospital emergency departments (ED), who may upload to local health departments in larger cities for analysis purposes (see data notes below).
ACCESS	Internal database at city health department, direct system access via electronic portal through formal arrangement, such as a data use agreement.
DRUGS INCLUDED	All ED admissions noting overdose-related chief complaints or diagnoses.
HOW CONTENT IS PRODUCED	ED admissions are recorded by ED staff in real-time at the point of service in the ED electronic health record. Each record includes text describing the patient’s chief complaint, sometimes supplemented or substituted with an ICD-9 diagnosis code. (In NYC, ED admission records are uploaded to the city health department via electronic portal every 12 hours.)
DATA REQUEST FOR RXSTAT	RxStat has direct, real-time system access via electronic portal to all variables in the ED syndromic database, including date of visit, time of visit, chief complaint, hospital, patient sex, patient zip code of residence, patient age, mode of arrival, and disposition. See Case Selection Code section below for coding instructions to identify all chief complaints defined as “overdose.”
POTENTIAL LAG-TIME	Real-time, within 24 hours of ED visit.
DATA NOTES AND CAVEATS	<ul style="list-style-type: none"> a. Real-time uploads from EDs to local health departments are usually arranged to conduct public health surveillance of communicable disease outbreaks and suspected bioterrorism events. Tracking suspected drug overdose events represents a novel use of syndromic data. b. If the jurisdiction is small or the local health department does not receive hospital ED uploads, alternately, RxStat analysts could arrange daily reviews of local ED data with ED or hospital leadership.
DATA PREPARATION	Data are analyzed by date, ED, patient zip code of residence, neighborhood of residence, and neighborhood of hospital. Statistical tests are performed to identify any increase above what would be expected (level of significance, 5%). These analyses are used for internal purposes only.
ANALYSIS PLAN FOR RXSTAT	RxStat indicators: Volume of “overdose” cases per calendar quarter, in comparison with previous year same calendar quarter.

Case selection code

Definition: Overdose –

```
OD=Prxmatch("/ OD|OD | O\.D\.|O\.D\. | O[[:punct:]]D|^OD|OVERDO|OVER DOSE|OVER D|  
DRUG O.|O. DOSE|EXTRA DOSE|OPVER DOSE|OVER.DO.E|TOO MUCH DRUG|TOO MANY DRUG  
|OUDOSE|D.O.D /", CC) >0;
```

```
**OD Exclude;
```

```
If OD GE 1 Then
```

```
Exclude1=Prxmatch("/PERIOD|LOOD|BODY|CODE|ODONTAL|GOD|EPISOD|NODULE|  
TODAY|MODERATE|PRODUCTIVE|DISLODGED|ODOR|C[[:punct:]]O D|HEMODIALYSIS|PROD|  
NODES|SODIUM|O D/", CC) >0;
```

```
Else Exclude1=.;
```

```
If OD GE 1 AND Exclude1=0 Then
```

```
Exclude2=Prxmatch("/ODOUR|POD|EXTRNOD|BOOD|DISCHARGE|OPPOSITIONAL|NOD  
|ROD|BLLOD|BLOD|PARANIOD|TOD|ODD BEHAVIOR|PROSTATE|THYRIOD|SUGAR|BOD  
|STERIOD|TA[LG][LG]IA|ALGIA|.OOD|HEM[MO]|FIBRIOD|ODON/", CC) >0;
```

```
Else Exclude2=.;
```

```
If Exclude1 > 0 Then Exclude=1;
```

```
Else if Exclude2 >0 Then Exclude=1;
```

```
Else Exclude=.;
```

```
If OD > 0 And Exclude NE 1 Then Overdose=1;
```

```
Else Overdose=0;
```

```
Drop OD Exclude Exclude1 Exclude2;
```

e. Ambulance calls for suspected overdose events

NAME	Emergency Medical Services (EMS) ambulance calls.
AGENCY OWNER	Fire department or first responder agency responsible for oversight of all EMS services in the jurisdiction.
ACCESS	Data prepared for RxStat by first responder agency owner.
DRUGS INCLUDED	All ambulance calls responding to suspected drug overdose incidents.
HOW CONTENT IS PRODUCED	Information on EMS calls is recorded electronically for all agency-managed EMS calls. Each call includes zip code of dispatch and clinical indicators such as vital signs and prior medical history.
DATA REQUEST FOR RXSTAT	All calls where naloxone was administered.
POTENTIAL LAG-TIME	EMS data is collected in real-time. For the purposes of RxStat, it is prepared and provided by the agency owner on a monthly basis.
DATA NOTES AND CAVEATS	Some cases are not overdoses; naloxone was administered as a precautionary measure, but it was subsequently determined the case was not an overdose.
DATA PREPARATION	Clinical data from the call is examined to remove calls that meet exclusion criteria (in development).
ANALYSIS PLAN FOR RXSTAT	Spatial distribution of probable non-fatal overdoses in comparison with the spatial distribution of fatal overdoses.

f. Substance use disorder treatment admissions

NAME	Substance use disorder treatment admissions dataset. See data notes and caveats for detail.
AGENCY OWNER	Single state agency (SSA) reporting to federal Substance Abuse and Mental Health Services Administration (SAMHSA).
ACCESS	From SSA, as data tables prepared by SSA for RxStat.
DRUGS INCLUDED	All substances, reported by drug class or specific drug type (where prevalence of specific drug use is dominant).
HOW CONTENT IS PRODUCED	All licensed programs report patient-level treatment admissions data to the SSA via electronic reporting system.
DATA REQUEST FOR RXSTAT	RxStat receives data tables of aggregated data, including: participant demographics and socio-economic status; self-reported drug use (type, frequency, route of administration); referral source and detail.
POTENTIAL LAG-TIME	Estimated lag time of 6 months after the treatment event. Annual reports are available from SAMHSA TEDS with a lag-time of one calendar year.
DATA NOTES AND CAVEATS	<ul style="list-style-type: none"> a. SSA are required to report all treatment admissions data to SAMHSA on a routine basis. SAMHSA compiles these data as the Treatment Episode Data Set (TEDS) and presents information by state, reporting aggregate characteristics of treatment admissions per calendar year. For details, see website: http://www.dasis.samhsa.gov/webt/information.htm
DATA PREPARATION	Sort records to identify those for the jurisdiction of residence for the time period of interest. (In NYC, the jurisdiction level used for sorting and preparing this dataset is the county, or borough.)
ANALYSIS PLAN FOR RXSTAT	RxStat indicators: Opioid and opioid-type misuse admissions, overall (N,%), by borough, by age, by route of administration, by referral source. Other drug class and type misuse admissions occurring with considerable frequency (N, %), by borough, by age, by route of administration, by referral source.

g. Jail health services intakes

NAME	Jail health services intake dataset.
AGENCY OWNER	Local health department or provider contracted to deliver healthcare services.
ACCESS	From provider, direct system access via electronic portal to electronic health record, arranged by data use agreement.
DRUGS INCLUDED	All drug use self-reported by prisoners at intake, and identified in prisoner urine drug screening at intake.
HOW CONTENT IS PRODUCED	Within 24 hours of admission to the jail, new prisoners undergo a full physical and mental health examination. The jail healthcare provider uses an electronic health record to manage patient information.
DATA REQUEST FOR RXSTAT	Via electronic portal, RxStat has access to specific patient-level variables in the electronic health record, including: gender, race, ethnicity, zip code of residence, age on intake, education level; self-reported drug use (type, frequency, quantity); self-reported mental health history; urine drug screen results, all drugs identified.
POTENTIAL LAG-TIME	Lag-time is dependent on whether there is an electronic health record system in place. With an electronic health record system, data is available in real-time via the electronic portal.
DATA NOTES AND CAVEATS	<ul style="list-style-type: none"> a. All jurisdictions are required to provide adequate medical care to prisoners. b. In larger jurisdictions, the local health department may deliver or oversee healthcare services in the jail, but in most jurisdictions, care is delivered via agreement with a local healthcare provider.
DATA PREPARATION	Count of new admissions during a time period of interest with reported or identified drug use, by drug type and demographics. Assign zip code of residence to neighborhood and borough.
ANALYSIS PLAN FOR RXSTAT	<p>RxStat indicators:</p> <p>Opioid misuse among new admissions, overall (N, %), by neighborhood and borough, by age.</p> <p>Other drug misuse among new admissions (N, %), by drug type.</p>

h. Dispensed prescriptions for controlled substances

NAME	Prescription Monitoring Program (PMP) or Prescription Drug Monitoring Program (PDMP).
AGENCY OWNER	State agency authorized by law to manage the program.
ACCESS	Direct electronic access, negotiated through formal arrangement with state agency, such as data use agreement.
DRUGS INCLUDED	All controlled substances prescribed for medical use in that state.
HOW CONTENT IS PRODUCED	Standards and methods vary somewhat from state to state, and are established in legislation. In all states with PMP, pharmacists filling a controlled substance prescription are required to submit related patient and drug information to the PMP. In addition, in some of these states, physicians prescribing a controlled substance must also submit related patient and drug information to the PMP office. The PMP office maintains these data as case records of each prescription event. A new record is produced for each prescription; patients can have multiple records.
DATA REQUEST FOR RXSTAT	From the PMP office, direct system access is provided for patients, providers, and pharmacies with a NYC zip code. The dataset includes four levels of data: prescription, patient, prescriber, and pharmacy.
POTENTIAL LAG-TIME	Lag-time is dependent on the PMP reporting system in place in the state. Some PMP offices maintain an on-line, real-time, state-wide electronic reporting system for providers, which should ensure complete data within one week (maximum) of the prescription event, if RxStat negotiates an agreement for direct access to the system. Many PMP offices maintain an internal tracking system, receiving, cleaning, and entering data from providers on a monthly basis, with an allowable lag-time of up to two weeks following the close of the reporting month. For datasets from these states, lag-time for RxStat analysis could extend up to three months, given time for data cleaning and report preparation within the PMP office.
DATA NOTES AND CAVEATS	Some states have not implemented a PMP. For a recent list and map of the status of states' PMP programs, please see: http://www.namsdl.org/library/1E4808C8-1372-636C-DD0293F829471A7E

<p>DATA PREPARATION</p>	<ol style="list-style-type: none"> 1. Methods for data cleaning: <ol style="list-style-type: none"> i) Location (residence, prescriber location, pharmacy location) <ul style="list-style-type: none"> • Use 3 digit zip code to create borough, state, and other. • Report borough level information. • For patient and prescriber calculate the most frequent location for the person in the period of interest. ii) Patient age <ul style="list-style-type: none"> • Age is at prescription refill. • Calculate the average age in the period of interest to obtain patient age in the period of interest. iii) Reassign “oxymorphone” per detail provided in Case Selection Code section below. iv) Apply short-acting and long-acting classifications provided in Case Selection Code section below. v) Apply “Schedule II” definition, provided in Case Selection Code section below. vi) Apply exclusions, provided in Case Selection Code section below. 2. Calculate age-adjusted rates <ul style="list-style-type: none"> • Use population estimates as denominators for the year of interest. • Age-adjust to US Standard Census 2000 weights
<p>ANALYSIS PLAN FOR RXSTAT</p>	<p>Drug types include: Codeine, Fentanyl, Hydrocodone, Hydromorphone, Meperidine, Methadone, Oxycodone, Oxymorphone, and Pentazocine.</p> <p>RxStat indicators:</p> <ul style="list-style-type: none"> • Number of prescriptions filled overall and by type • Number of patients filling prescriptions by demographics (age, gender, residence) • Number of prescribers • Number of pharmacies • Median day supply of prescriptions • Morphine equivalent dose (MED) of prescriptions • Number and rate of high dose (morphine equivalent dose \geq 100) prescriptions filled

Case selection code

Definition: Oxymorphone –

if ndc number in ('16590060930','16590060960','16590060990','16590074730','
16590074756','16590074760','16590074790','16590076730','16590076756','
16590076760','16590076790','21695094860','21695094960','60760061760','
63481052270','63481052275','63481055370','63481055375','63481057170','
63481057175','63481061270','63481061370','63481061770','63481061775','
63481062410','63481067470','63481067475','63481069370','63481069375','
63481090770','63481090775','63629417301','63629417302','63629417303','
63629417304','63629417401','63629417402','63629417403','63629417701','
63629417702','63629417703') then ndc_acronym='OXYM';

Definition: Short-acting and Long-acting drug classifications –

- Merging by NDC number, the NDC file available from CDC Injury Center (see XXX)
- For any prescription with missing short acting or long acting classification, assign according to drug type for drugs that are only short acting in form or long acting in form.
- Apply MED calculations
- Cannot calculate MED with prescriptions missing information on strength, quantity dispensed, day supply, or Morphine Milligram Equivalent conversion factor.
- Check data for any missing information and apply formula to those without missing information.
- Exclude missing day supply, day supply = 999.
- Formula: $\text{dailydose} = (\text{strength} * \text{quantity_dispensed}) / \text{days_supply}$;
- $\text{MED} = \text{dailydose} * \text{MME_CONVERSION_FACTOR}$

Definition: Schedule II controlled substances –

('FENT', 'HYDM', 'MEPE', 'METD', 'MORP','OXYC','HYDC', 'OXYM')

Exclusions –

- Exclude institutions: dea_busncode ne 'B'
- Exclude veterinarians: dea_profcode not in ('74', '75') and lic_specode not='500'
- Exclude missing patient number as these patients cannot be uniquely identified
- Exclude missing prescriber number as these providers cannot be uniquely identified

II. PUBLIC SAFETY ADMINISTRATIVE DATASETS

a. Pharmacy orders for prescription opioid medication stock

NAME	Automation of Reports and Consolidated Orders Systems (ARCOS).
AGENCY OWNER	Drug Enforcement Administration (DEA).
ACCESS	A law enforcement agency must make the request to the DEA for ARCOS data. In NYC, NY/NJ HIDTA obtained approval from DEA headquarters via a request for a data report submitted by the local DEA office (which participates in RxStat).
DRUGS INCLUDED	All Schedules I and II materials and Schedule III narcotic and gamma-hydroxybutyric acid (GHB) materials.
HOW CONTENT IS PRODUCED	Reports are filed to DEA at three levels: (1) by manufacturers at the point of a logged order, (2) by a regional distributor to report what is in inventory and what is being ordered, and (3) by a local pharmacy to report what is in inventory and what is being ordered. Report to ARCOS is generated at the point of transaction, and reflects orders placed and inventory in stock for each drug (by NDC# and dosage units).
DATA REQUEST FOR RXSTAT	RxStat receives data from DEA on a calendar quarterly basis. Data reports orders only from pharmacies in the jurisdiction. RxStat does not receive data from DEA on what stock is in inventory at local pharmacies. Data is provided on all Schedule II and III controlled substances ordered by pharmacies at the zip code level. The variables included are: NDC number, NDC trade name, drug type, package size, total dosage units, and grams of controlled substance.
POTENTIAL LAG-TIME	Minimum one calendar quarter lag, up to two calendar quarters lag.
DATA NOTES AND CAVEATS	<ul style="list-style-type: none"> a. Law enforcement may be able to obtain access to examine specific pharmacies with consistent high-volume orders for unexplained suspicious activity. b. RxStat could also request inventory reports alongside order reports, to develop a fuller picture for local availability of controlled substances in pharmacies.

<p>DATA PREPARATION</p>	<p>All data is anonymized, stripped of identifying name or location characteristics other than zip code.</p> <p>Data is prepared as follows:</p> <p>Merge ARCOS file with the NDC product codes, NDC package codes, and CDC MME conversion worksheet.</p> <p>Identify any NDC codes not in the files above and manually add in the missing data.</p> <p>Create a master strength field for analysis.</p> <p>Create a pill variable to exclude all liquids, powders, suppositories, patches, sprays, solutions, etc.</p> <p>Using the NDC codes and CDC files, categorize all opioid analgesics into specific drug types (morphine, hydrocodone, oxycodone, etc.).</p> <p>Calculate the morphine milligram equivalent for each type of opioid analgesic.</p> <p>Create a borough variable from pharmacy zip code.</p>
<p>ANALYSIS PLAN FOR RXSTAT</p>	<p>Drug types include: All Schedule II and III substances, including: Codeine, Fentanyl, Hydrocodone, Hydromorphone, Meperidine, Methadone, Oxycodone, Oxymorphone, and Pentazocine.</p> <p>RxStat indicators:</p> <p># pills per drug type by borough of pharmacy, per quarter.</p>

b. Drug-related prosecutions

NAME	Drug-related prosecutions.
AGENCY OWNER	District Attorney's (DA) Office.
ACCESS	Gained through DA participation.
DRUGS INCLUDED	All prosecutions for narcotic drugs and controlled substances are included. The data captured is based upon prosecution charge, not arrest charge. Of note, in New York State, marijuana-related arrests are classified under a different statute than controlled substances and narcotic drugs. This marijuana statute is not selected during data compilation, but marijuana is included in the data capture if it is present in a case alongside a controlled substance or narcotic drug.
HOW CONTENT IS PRODUCED	Information on a DA Office's system serves as the dataset for analysis, and includes both information the DA Office receives from the Police Department and information the DA Office produces. The "complaint language" is written by an Assistant District Attorney assigned to the case in the intake bureau, and is included in a legal document where the ADA sets forth the grounds for the criminal charges. This "complaint language" is used to capture and identify drug type(s) involved in a specific prosecution.
DATA REQUEST FOR RXSTAT	RxStat receives data from the DA Offices as it is produced and prepared for monthly working group meetings. Data is organized per prosecutions by the DA Office for narcotic drugs and controlled substances (not including marijuana unless it is present in a prosecution involving narcotic drugs and/ or controlled substances). Data elements per prosecution include: (1) demographics - defendant's age, gender, race, zip code of residence, residence precinct; (2) location - arresting precinct, address of arrest; (3) charges - top screening drug charge, top screening sale charge, top screening possession charge; (4) drugs involved.
POTENTIAL LAG-TIME	Up to one month.

<p>DATA NOTES AND CAVEATS</p>	<ul style="list-style-type: none"> a. Reflects the practice and approach of prosecutors’ offices in New York City, which may differ considerably from other jurisdictions. b. Includes only cases arraigned on narcotic drugs and controlled substances charges; does not include arrests where these charges were subsequently dropped. c. The data includes number of prosecutions, and number of instances of a drug. Oftentimes cases involve more than one drug, as such the “instances” total for a given time period will far outnumber the “prosecutions”.
<p>DATA PREPARATION</p>	<p>SQL code is used to draw information from the DA Office’s system. The main functions of the code are to isolate the drug related prosecutions out of total prosecutions (and within a certain time frame), pull relevant information about the case (ie, about the defendant, charges, and location of arrest), and indicate which drug(s) were involved. Drug related prosecutions are isolated by using the specific penal charges for narcotic drugs and controlled substances. To identify which drugs are involved, the complaint language is searched for key drug terms, including common misspellings of these terms.</p> <p>Records (prosecutions) are then labeled as including or absent the identified drug type(s). Code output is transferred to a relational table (e.g., Excel). Records which have not been classified with a drug type through this process are manually coded by individually looking up the case on the DA Office’s system and attempting to ascertain the drugs involved. If new misspellings for a particular narcotic drug or controlled substance are thereby discovered these are recorded and utilized in future searches to reduce the need for hand recoding. The cases are only hand recoded if no drug is classified, so there is a margin of error as in a case where there are controlled substances or narcotic drugs that are misspelled but not with a known misspelling and other controlled substances or narcotic drugs are also present and spelled correctly. In such cases, the DA Office will not know to hand recode those cases and instances of drugs will be missed.</p> <p>For sending the data out of the DA’s office, records are anonymized and de-identified, by removing docket information, screening date and outcome, bureau of case, case status, sentence type, individual identifiers of defendant(e.g., name, arrest ID, date of birth, defendant address), and the text of the complaint language.</p>

**ANALYSIS PLAN FOR
RXSTAT**

RxStat indicators:

Narcotic drug and controlled substance prosecutions by drug type, as a proportion of all narcotic drug and controlled substance prosecutions, during the period of interest by borough. If the prosecutions data is displayed visually, one must take caution to specify if the data displayed is by prosecution or by instance. This is due to the fact that many cases involve more than one drug type hence the instances will outnumber the number of prosecutions. Most commonly, RxStat utilizes the graphs or charts that reflect the number of instances of each drug type out of total number of incidences of all drugs.

Additionally, (where relevant) prosecutions by age, neighborhood, felonies versus misdemeanors, location of residence as compared to location of arrest, etc. can be analyzed.

Case selection code varies by prosecutor's office.

c. Pharmacy/clinic/doctor's office burglaries and robberies

NAME	Burglaries and robberies at pharmacies and clinics/doctor's offices where the intent is to obtain controlled prescription drugs.
AGENCY OWNER	Police department (PD).
ACCESS	Provided through PD participation in RxStat.
DRUGS INCLUDED	Any controlled substance reported as stolen or missing as a result of the robbery or burglary. See Data notes below.
HOW CONTENT IS PRODUCED	Any reported burglary or robbery of a pharmacy or clinic or doctor's office location (as recorded by PD).
DATA REQUEST FOR RXSTAT	RxStat receives data from PD as it is produced and prepared for monthly work group meetings. Data is organized per event. Data elements per event include: (1) date; (2) type of location – pharmacy or clinic/doctor's office; (3) geographic location; (4) mode of entry; (5) drugs – substances taken (types, strength); # pills taken (if available); (6) arrest made.
POTENTIAL LAG-TIME	Up to one month.
DATA NOTES AND CAVEATS	<ul style="list-style-type: none"> a. Definitions – “burglary” represents entry to premises when no one is there, and “robbery” represents on-premises demand for medication from an employee. b. Definitions (New York City) – “attempted burglary” represents an attempt to enter premises without success. If a perpetrator successfully enters the premises, even if not successful in obtaining controlled prescription drugs, the event is not indicated as attempted. c. In the events where nothing was stolen, it is presumed that the intent was to access controlled substance medications (and thus included in the counts), unless the intent was clearly to obtain other items such as cash or cigarettes.
DATA PREPARATION	Data are quantified and detailed by PD.
ANALYSIS PLAN FOR RXSTAT	RxStat indicators: Number of burglaries and robberies of pharmacies and clinics/ doctor's offices in each county during the period of interest. Number of pills taken from burglaries and robberies during specific time period and location, reported by drug type (if available).

d. Loss or theft of controlled substance medications

NAME	DEA-106 loss/theft report.
AGENCY OWNER	Drug Enforcement Administration (DEA).
ACCESS	A law enforcement agency must make the request to the DEA for DEA-106 data. In NYC, NY/NJ HIDTA requested the data report from the local DEA office (which participates in RxStat).
DRUGS INCLUDED	Any prescribed medication defined as a controlled substance.
HOW CONTENT IS PRODUCED	Report is filed to DEA by any entity with a DEA #, including pharmacy, distributor, and manufacturer, within 24 hours of the time of an event involving the loss or theft of controlled prescription medication.
DATA REQUEST FOR RXSTAT	RxStat receives data from DEA on a calendar quarterly basis for losses reported by pharmacies, manufacturers, or distributors. Data reports on location of pharmacy, manufacturer, or distributor, drug type, medication dosage, and quantity missing.
POTENTIAL LAG-TIME	Up to one month.
DATA NOTES AND CAVEATS	a. Reports on losses incurred which are categorized as: armed robbery, customer theft, employee pilferage, lost in transit, night break-in, or other.
DATA PREPARATION	N/A
ANALYSIS PLAN FOR RXSTAT	Drug types are any controlled substance, and include: Codeine, Fentanyl, Hydrocodone, Hydromorphone, Meperidine, Methadone, Oxycodone, Oxymorphone, and Pentazocine. RxStat indicators: Number of incidents by incident type, by county. Number of pills by drug type or incident type, by county.

e. Medicaid coverage of local residents for prescribed controlled substance medications

NAME	Medicaid-covered prescriptions to residents for controlled substance medications.
AGENCY OWNER	Local department of social services (DSS) or human services.
ACCESS	Provided by local DSS office participating in RxStat.
DRUGS INCLUDED	Any prescribed medication defined as a controlled substance.
HOW CONTENT IS PRODUCED	Report is produced by DSS, based on prescriptions covered by Medicaid to local residents for controlled substance medications.
DATA REQUEST FOR RXSTAT	<p>RxStat receives data produced and prepared by DSS on a quarterly basis. Data is presented at three levels:</p> <ol style="list-style-type: none"> 1. Recipients – per zip code, NDC # and name, average days duration prescription, average recipient age, county, # transactions, # unique recipients, total dosage units per NDC #, average number of refills. 2. Pharmacy providers – per zip code, NDC # and name, total dosage units, average days supply, average # refills, average recipient age, county, # transactions, # unique pharmacies. 3. Clinician prescribers – per zip code, NDC # and name, total dosage units, average days supply, average # refills, average recipient age, county, # transactions, # unique prescribers.
POTENTIAL LAG-TIME	Up to one calendar quarter, based on Medicaid billing cycles and subsequent data cleaning needs.
DATA NOTES AND CAVEATS	<ol style="list-style-type: none"> 1. Captures information on prescriptions filled only. 2. Captures information on prescriptions to Medicaid beneficiaries and which were covered by Medicaid, requiring rate calculations that present this information as a proportion of the total number of Medicaid beneficiaries in that area (eg, per zip code).
DATA PREPARATION	<p>Information is initially prepared by DSS in tables for each level of data, as described above.</p> <p>Group NDC # by drug type (eg, oxycodone) and calculate total dosage units, average number of refills, average duration of prescription – per zip code.</p>
ANALYSIS PLAN FOR RXSTAT	<p>RxStat indicators:</p> <p>Rate of drug type total dosage units per zip code</p> <p>Average # of refills, average duration of prescription, per zip code</p>

III. SURVEY DATA

a. Youth drug use behaviors

NAME	Youth Risk Behavior Surveillance System (YRBSS).
AGENCY OWNER	Centers for Disease Control (CDC) via state health department.
ACCESS	Through CDC online query system, or through specific reports produced by state health department. Information is available at: http://www.cdc.gov/HealthyYouth/yrbs/index.htm?s_cid=tw_cdc16
DRUGS INCLUDED	Marijuana, cocaine, inhalants, heroin, methamphetamine, ecstasy, prescription pain medications (opioids), other prescription drugs (including benzodiazepines).
HOW CONTENT IS PRODUCED	Survey is administered to a representative sample of anonymous public high school students in the state, in the classroom, on a biannual basis. Data is compiled and cleaned by state health department, and submitted to the CDC for analysis and reporting.
DATA REQUEST FOR RXSTAT	Reports on drug type distribution by demographics and geography (where feasible).
POTENTIAL LAG-TIME	Survey is administered biannually; data is available for analysis and reporting 6 months after the calendar year reporting.
DATA NOTES AND CAVEATS	<ul style="list-style-type: none"> a. YRBS is a state-wide survey. As a result, data is not representative for regions of the state, only for the state as a whole. b. NYC is the only local jurisdiction administering its own YRBS; data is available by borough.
DATA PREPARATION	N/A
ANALYSIS PLAN FOR RXSTAT	For examples see: http://www.cdc.gov/HealthyYouth/yrbs/index.htm?s_cid=tw_cdc16

b. Adult drug use behaviors

NAME	National Survey on Drug Use and Health (NSDUH).
AGENCY OWNER	Substance Abuse and Mental Health Services Administration (SAMHSA).
ACCESS	Through SAMHSA reports produced for state-level data, or individual queries for analyses of large municipalities. For further information see: http://www.samhsa.gov/data/NSDUH.aspx
DRUGS INCLUDED	Marijuana, cocaine, heroin, hallucinogens, inhalants, psychotherapeutics (including sub-categories for pain relievers, tranquilizers, stimulants, sedatives).
HOW CONTENT IS PRODUCED	Survey is administered to a representative sample of adults (age 12 years and older) in the state, in person and anonymously, using computer-assisted survey software to preserve the confidentiality of responses.
DATA REQUEST FOR RXSTAT	Reports on drug type distribution by demographics.
POTENTIAL LAG-TIME	Survey is administered annually; data reports are available up to one year after the calendar year reporting.
DATA NOTES AND CAVEATS	<ul style="list-style-type: none"> a. Annual NSDUH data is geographically representative at the state level only. b. For large municipalities, it may be possible to achieve sufficient power in the data at the local level by combining multiple years of data.
DATA PREPARATION	N/A
ANALYSIS PLAN FOR RXSTAT	For examples see: http://www.samhsa.gov/data/NSDUH.aspx

c. Arrestee drug use detection

NAME	Arrestee Drug Abuse Monitoring (ADAM) program.
AGENCY OWNER	National Institute of Justice (NIJ).
ACCESS	Through specific information query to NIJ or from report produced; see: http://www.whitehouse.gov/sites/default/files/ondcp/policy-and-research/adam_ii_2012_annual_rpt_final_final.pdf .
DRUGS INCLUDED	Marijuana, cocaine, heroin and other opiates, methamphetamine, other drugs.
HOW CONTENT IS PRODUCED	Survey is administered at selected courts in selected large cities during selected years, to all arrestees who are admitted to that court. Participation is voluntary and involves self-reported drug use data and urinalysis monitoring.
DATA REQUEST FOR RXSTAT	Reports on drug type distribution by demographics.
POTENTIAL LAG-TIME	Survey is administered annually; data is available for analysis and reporting 6 months after the calendar year reporting.
DATA NOTES AND CAVEATS	<ul style="list-style-type: none"> a. This dataset is not used in RxStat b. In 2012, survey was administered in Atlanta, Chicago, Denver, New York, Sacramento, Washington D.C.
DATA PREPARATION	N/A
ANALYSIS PLAN FOR RXSTAT	N/A

d. Emergency room admissions with drug mentions

NAME	Drug Abuse Warning Network (DAWN)*
AGENCY OWNER	Substance Abuse and Mental Health Services Administration (SAMHSA).
ACCESS	Through information queries to SAMHSA, and from reports produced by the program, see: http://www.samhsa.gov/data/DAWN.aspx
DRUGS INCLUDED	Illicit drugs and prescription drugs.
HOW CONTENT IS PRODUCED	General, non-federal, short-stay hospitals in 12 metropolitan areas were invited to participate. For those hospitals responding to the invitation, a trained reporter was stationed at the institution to conduct retrospective data collection of all emergency department (ED) medical records and note “drug mentions” related to drug abuse or misuse, via a standard abstraction protocol.
DATA REQUEST FOR RXSTAT	Reports on drug type distribution by demographics.
POTENTIAL LAG-TIME	Data abstraction and analysis is conducted annually; data is available for analysis and reporting one year after the calendar year reporting.
DATA NOTES AND CAVEATS	<ul style="list-style-type: none"> a. This dataset is not used in RxStat b. *Last year of reporting was 2011. Program has since been discontinued
DATA PREPARATION	N/A
ANALYSIS PLAN FOR RXSTAT	N/A

NEW YORK CITY
DEPARTMENT OF HEALTH
AND MENTAL HYGIENE



NY/NJ HIDTA